What is claimed is:

1. An optical wavelength switch comprising:

a first and a second slab wave guides;

an array wave guide connected with the first and the second slab wave guides;

a movable mirror array having a plurality of reflecting mirrors, arranged on the second slab wave guide opposite to the side where the array wave guide is connected therewith; and

an optical wave guide arranged on the first slab wave guide opposite to the side where the array wave guide is connected therewith, for inputting an input optical signal wavelength-multiplexed and outputting an optical signal wavelength-demultiplexed from the input optical signal, wherein

the optical wavelength switch has a focal point of an output optical beam from the second slab wave guide at the positions of the plurality of reflecting mirrors constituting the movable mirror array, the optical wavelength switch operable to switch the route of the optical signal reflectively inputted to the second slab wave guide, depending on the set direction of reflection of the plurality of reflecting mirrors.

2. The optical wavelength switch according to claim 1, wherein

the plurality of reflecting mirrors constituting the movable mirror array have dented reflecting faces, and wherein

the angle of reflection of the reflecting mirrors is set by moving the dented reflecting faces along a direction perpendicular to the optical axis.

3. The optical wavelength switch according to claim 2, wherein the optical wavelength switch includes a space between the movable mirror array and the second slab wave guide and includes at the dented portions a clad layer and a core layer having the same structure as that of the second slab wave guide.

4. An optical wavelength switch having a planar wave guide formed on a substrate,

the planar wave guide having at least one wave-guide-type diffraction grating which includes

an input/output wave guide,

a first slab wave guide connected with the input/output wave guide,

an array wave guide whose one side is connected with the first slab wave guide, and

a second slab wave guide with which the other side of the array wave guide is connected,

the optical wavelength switch comprising:

a moving part supported in a cantilevered manner on

the substrate; and

a reflecting mirror formed at the tip of the moving part such that it faces an end face of the second slab wave guide, wherein

the reflecting mirror is obtained by forming a groove having a dented face on the moving part by etching such that the groove faces the end face of the second slab wave guide, the reflecting mirror being adapted to totally reflect at the dented face a optical beam outputted from the end face of the second slab wave guide.

5. The optical wavelength switch according to claim 4, wherein

the moving part has a clad layer having the same structure as that of the slab wave guide, wherein

the core layer and the clad layer respectively have a refractive index of 1.4142 or higher, with the groove having the dented face forming an air layer, and wherein

the relationship between positions of the end face of the second slab wave guide and the dented face is set such that the angle of incidence of a optical beam entering from the end face of the second slab wave guide into the dented face is 45 degrees or larger in an area from the dented face of the moving part toward the end face of the second slab wave guide.

6. An optical wavelength switch having a planar wave guide

formed on a substrate, comprising:

a wave-guide-type diffraction grating which includes

an input/output wave guide having an under-clad layer on a sacrificial layer formed on the substrate, a core layer formed on the under-clad layer and an over-clad layer formed on the core layer,

a first slab wave guide connected with the input/output wave guide,

an array wave guide whose one side is connected with the first slab wave guide, and

a second slab wave guide with which the other side of the array wave guide is connected; and

a movable girder whose one end is firmly secured to the substrate, the movable girder having the same under-clad layer, core layer and over-clad layer as those of the wave-guide-type diffraction grating, wherein

the optical wavelength switch has a reflecting mirror at the tip of the movable girder, the reflecting mirror facing an end face of the second slab wave guide, with the position of the reflecting mirror being set displaceable along a direction perpendicular to the optical axis.

7. The optical wavelength switch according to claim 6, wherein the face of the reflecting mirror toward the end face of the second slab wave guide is formed in a dented face.

8. The optical wavelength switch according to claim 6, wherein

the optical wavelength switch has an air layer of a groove etched to the sacrificial layer between the wave-guide-type diffraction grating and the reflecting mirror, and wherein

the reflecting face of the reflecting mirror is formed by forming a high-reflectivity film on a groove wall, toward the end face of the second slab wave guide, of the groove formed by etching reaching a part of the under-clad layer of the movable part.

9. An optical wavelength switch according to claim 4, wherein

the optical wavelength switch has two of the wave-guide-type diffraction grating, wherein

the two first slab wave guides respectively have a part common to each other and are integrated such that end faces for connecting the input/output wave guide are different from each other, and wherein

the two second slab wave guides respectively have a part common to each other and are integrated such that end faces for connecting respectively different reflecting mirror arrays are different from each other.

10. A method for fabricating an optical function device having a wavelength switching function, the method

comprising the steps of:

forming a sacrificial layer of GSG (germanium-added silica glass) on a silicon substrate:

forming a wave guide structure having an under-clad layer and an over-clad layer of BPSG (boron-and-phosphorus-added silica glass) or PSG (phosphorus-added silica glass) and a core layer of GPSG (germanium-and-phosphorus-added silica glass) formed between the under-clad layer and the over-clad layer;

forming the shape of a movable part and a wave guide end face by applying anisotropic etching of the over-clad layer and the under-clad layer or the core layer reaching the sacrificial layer; and

separating the movable part from the substrate by removing the sacrificial layer beneath the movable part by applying isotropic etching.